UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/644,261	08/20/2003	Ahmad C. Ansari	1033-T00529	7477

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EXAMINER
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ART UNIT	PAPER NUMBER
2622	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/644,261	ANSARI ET AL.
	Examiner	Art Unit
	Pritham Prabhakher	2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>*20 August 2003*</u>.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>*1-31*</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) <u>*1-31*</u> is/are rejected.

7) ☒ Claim(s) <u>*21*</u> is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on <u>*20 August 2003*</u> is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date <u>*01/03/2006*</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 21 is objected to because of the following informalities: Information is spelled improperly as "inforation".

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 4-12, 14-18, and 20-31 are rejected under 35 U.S.C. 102(e) as being anticipated by Foote et al. (US Patent No.: 7015954B1).

With regard to **Claim 1**, Foote et al. teach of an image capture system *(The invention has a system of cameras for image and video capturing, **Column 2, Lines 40-42)** comprising:*

a processing engine operable to perform an image processing function (The reference has a combining device which combines/warps (processes) images, **Column 18, Lines 10-18)**;

a first image sensor operable to capture a first view of a scene and to output first information representing the first view (The reference teaches of a first image sensor, capturing a view (210) of a scene to be output to a display such as (286) in Figure 2B or 1560 in Figure 15, **See Figures 2A and 2B, Figure 15 and Column 6, Lines 19-30 and Lines 55-65)**;

a second image sensor operable to capture a second view of the scene and to output second information representing the second view (The reference teaches of a second image sensor capturing a view (220). The captured view of the scene can be output to a display such as (286) in Figure 2B or 1560 in Figure 15, **See Figures 2A and 2B, Figure 15 and Column 6, Lines 19-30 and Lines 55-65)**;

a selector operable to selectively route at least a portion of scene view information to the processing engine, the scene view information comprising the first information and the second information (The scene view information comprises the first information and the second information because the images are combined into a single panoramic image, **Column 6, Lines 19-30 and Figure 2A**. A combining device 1530 (processing engine) can be used to warp these images together, **Column 18, Lines 9-17**. There is a selector present in the invention that allows any desired sub-image to be selected. The portion of the scene of view that is not of interest can be discarded (not selected), **Column 6, Lines 26-33)**; and

a mounting surface on which the first and the second image sensors are secured

(Figure 2B shows the mounting surface (260) on which the first and second image

sensors are secured).

Regarding Claim 2, the reference teaches of the system of claim 1 further

comprising a support having an exterior surface that comprises the mounting surface,

the support having a geometry selected from the group consisting of a generally planar

geometry, a generally cylindrical geometry, and a generally spherical geometry (Figure

1A show the cameras are mounted on an exterior surface comprising the mounting

surface where the geometry of the support is generally planar, cylindrical and spherical).

With regard to Claim 4, the reference teaches of the system of claim 1 wherein

the first and second image sensors are operable as digital video sensors (The reference

teaches that the CMOS image sensors are video cameras, Column 4, Line 35 and

Column 5, Line 50), further wherein the first and second image sensors are adjustably

secured to the mounting surface (The cameras (image sensors) are moveable

(adjustable) with respect to each other, Column 7, Line 22. They are also adjustably

secured to a mounting surface as shown in Figure 2B).

In regard to Claim 5, Foote et al. teach of the system of claim 1, further

comprising a triggering engine operable to signal the selector to route all of the scene

information to the processing engine (A motion sensor functions as a triggering engine

that detects motion in a particular area and moves (selects) the appropriate camera to

capture information from that location, **Column 12, Lines 1 et seq**. This information is

then input to the combining device (processing engine), **Column 18, Lines 15-18).**

With regard to **Claim 6,** the reference teaches of the system of claim 1 further

comprising a microphone assembly (The cameras can be controlled using a

microphone assembly, **Column 16, Lines 11-26)**.

In regard to **Claim 7**, Foote et al. teach of the system of claim 1 wherein the first

image sensor has an orientation and the second image sensor has a different

orientation, further wherein the first and second image sensors are operable as digital

video sensors, the system further comprising:

a triggering engine communicatively coupled to the selector and operable to

signal the selector to route a specific portion of the scene view information to the

processing engine (A motion sensor functions as a triggering engine that detects motion

in a particular area and moves (selects) the appropriate camera to capture information

from that location, **Column 12, Lines 1 et seq**. This information is then input to the

combining device (processing engine), **Column 18, Lines 15-18)**; and

a directional determination assembly (camera array motion sensor) operable to

detect a direction of activity in the scene, the assembly further operable to output a

signal that informs the triggering engine of the direction (The camera array motion

sensor detects the motion (activity) in a particular region (determined direction). Upon

detecting a motion in a particular region, a signal (information) is sent to point another

camera in the appropriate direction, **Column 12, Lines 22-32).**

With regard to **Claim 8,** the reference teaches of the system of claim 7, wherein the triggering engine is further operable to signal the selector to route the second information to the processing engine in response to a determination that the second view should capture the activity *(The camera array motion sensor detects the motion (activity) in a particular region (determined direction). Upon detecting a motion in a particular region, a signal (information) is sent to point a second camera in the appropriate direction,* **Column 12, Lines 22-32.** *Images from the camera array are processed in the combining device,* **Column 18, Lines 14-**15. *If it is determined that only the second view should capture the activity, the other views can be discarded,* **Column 6, Lines 27-29.** *The view selection device may select only part of the combined image (second image part) for display,* **Column 18, Lines 20-21).**

In regard to **Claim 9**, the reference teaches of the system of claim 8, further comprising:

a support having an exterior surface that comprises the mounting surface, the support having a geometry that facilitates differing orientations of the first and the second image sensors *(The first and second image sensors are still mounted on a planar surface as shown in Figure 4C and Figure 1B. The first and second image sensors have different orientations because their field of view can be placed at right angles to each other or at different room corners,* **Column 12, Lines 30-33)**; and

an interface operable to communicatively couple an output of the processing engine to an external computing system *(A view selection device (operable interface) is used to select the output of the processing engine (combining device) and sends it to an*

external computing system such as the view selection device (1560), **Column 18, Lines 9-26).**

With regard to **Claim 10,** the reference teaches that the system of claim 9, wherein the activity comprises sound generation and the system further comprises a computer coupled to the interface (The view selection device may automatically select a view based on audio (sound) activity, **Column 18, Lines 24-25.** Also, the view selection device 1560 may make its selections based on the user input via an input mechanism 1575. The view selection device and the input mechanism can be implemented as a computer, **Column 18, Lines 21-31** and **Figure 15.**

Regarding **Claim 11,** Foote et al. teach of an image capturing system comprising:

a first image module communicatively coupled to a processing engine, the first image module operable to capture first image information (The reference teaches of a first image module capturing a view (210) of a scene (information) to be output to a display such as (286) in Figure 2B or display 1560 in Figure 15, **See Figures 2A and 2B, Figure 15** and **Column 6, Lines 19-30 and Lines 55-65.** The first image module is communicatively coupled with the processing engine (combining device 1540) because the combining device warps the piece of information from the first image module with other image information, **Column 18, Lines 10-17);**

a second image module communicatively coupled to the processing engine, the second image module operable to capture second image information (The reference

teaches of a second image sensor capturing a view (220). The captured view of the scene can be output to a display such as (286) in Figure 2B or 1560 in Figure 15, **See Figures 2A and 2B, Figure 15 and Column 6, Lines 19-30 and Lines 55-65.** The second image module is communicatively coupled with the processing engine (combining device 1540) because the combining device warps the piece of information from the second image module with other image information, **Column 18, Lines 10-17);** and

the processing engine operable to perform an image processing function on information received from the first image module and the second image module *(The combining device (processing engine) combines/warps (processes) images from the first and second image modules, **Column 18, Lines 10-18).***

In regard to **Claim 12**, the reference teaches of the system of claim 11 further comprising:

a third image module communicatively coupled to the processing engine *(Camera 3 is used to capture a view (230) of the scene, **Column 6, Lines 26 and 27.** Images from the camera array, which includes camera 3, are combined in a combining device 1540 (processing engine), **Column 18, Lines 14-16);** and

an interface operable to facilitate communication of a processing engine output to a computing device *(After going through the combining device 1540, the information that is combined is displayed on an output mechanism 1570, **Column 18, Lines 15-21 and Figure 15).***

With regard to **Claim 14,** the reference teaches of the system of claim 11 further

comprising a selection mechanism operable to switch the information received by the

processing engine from the first image information to the second image information

(The view selection device can select a image view based on video motion analysis.

Based on the analysis, the selection devise can switch from the first image information

to be displayed to the second, **Column 18, Lines 9-26).**

In regard to **Claim 15,** the reference teaches of the system of claim 11, wherein

the processing engine is operable to simultaneously perform an image processing

function on information received from the first image module and the second image

module (All warping (processing) is done simultaneously at video rates of 10 to 30

frames per second, **Column 11, Lines 65-67)**.

With regard to **Claim 16,** the reference teaches of the system of claim 11

wherein the first image module has a field of view and the second module has a

different field of view (Looking at Figure 2A it is evident that Camera 1 and Camera 2

capture two different fields of view of the object 200).

In regard to **Claim 17,** Foote et al. teach of the system of claim 11 wherein the

first image module has a resolution and the second module has a different resolution

(Ch1 and Ch2 represent two different cameras in Figure 10. Before merging the images

from Ch1 and Ch2, it is taught that the regions from Ch1 corresponding to the regions in

Ch2 differ in resolution (the regions are darker in Ch1), **Column 11, Lines 41-47)**.

With regard to **Claim 18**, the reference teaches of the system of claim 11

wherein the first image module comprises a digital zoom lens *(The invention is related*

to digital zooming of a scene by an array of cameras, **Column 1, Lines 26-30)**.

In regard to **Claim 20**, the reference teaches of the system of claim 11 wherein

the first image module comprises a fixed-focus and fixed-zoom lens *(The array of*

cameras can be fixed. Therefore, the focus and zoom of the first image module can also

be fixed, **Column 6, Lines 31-43)**.

With regard to **Claim 21**, the reference teaches of the system of claim 11,

wherein the first image information represent a first view of a scene and the second

image information represents a second view of the scene *(Looking at Figure 2A,*

Camera 1 has a different view (210) than Camera 2 (220). They each represent a

different view of the participant 200), further wherein at least a portion of the first

information represents a portion of the scene captured in the second view *(Looking at*

Figure 2A, Camera 1 represents a portion of participant 200 and Camera 2 represents a

portion of the same participant 200).

Regarding **Claim 22,** the reference teaches of a computer-readable medium

having computer-readable data (software) to correlate a plurality of image sensors with

a plurality of different views of a scene, to direct a triggering engine to identify from the

plurality of image sensors a first image sensor generating specific scene information

that represents a chosen view of the scene, to signal a selector to route the specific

scene information to a processing engine, and to perform a digital image processing

function with the processing engine on the specific scene information ("The present invention includes a computer program product which is a storage medium (media) having instructions stored thereon/in which can be used to program a computer to perform any of the processes of the present invention", **Column 18, Lines 40-43**. "Stored on any one of the computer readable medium (media), the present invention includes software for controlling both the hardware of the general purpose/specialized computer or microprocessor, and for enabling the computer or microprocessor to interact with a human user or other mechanism utilizing the results of the present invention. Such software may include, but is not limited to, device drivers, operating systems, and user applications. Ultimately, such computer readable media further includes software for performing the present invention, as described above", **Column 18, Lines 51-61**. Since the computer can be used to perform any of the processes of this present invention, the user can use the computer to control a specific sensor out of the plurality of image sensors to route the image pertaining to that sensor to the processing engine. The invention allows any desired sub-image (Image captured by one camera) to be selected, **Column 6, Lines 31-32**).

With regard to **Claim 23**, Foote et al. teach of an image capturing method (The invention has a system of cameras for image and video capturing method, **Column 2, Lines 40-42**), comprising:

correlating a plurality of digital image sensors with different views of a scene

(Abutting areas of different views of a scene from the multiple image sensors are

combined (correlated) together to form a panoramic image, **Column 6, Lines 19-26)**;

receiving information that represents a first view of the scene (The reference

teaches of a first image sensor, capturing a view (210) of a scene to be output to a

display such as (286) in Figure 2B or 1560 in Figure 15, **See Figures 2A and 2B,**

Figure 15 and Column 6, Lines 19-30 and Lines 55-65);

receiving additional information that represents a second view of the scene (The

reference teaches of a second image sensor capturing a view (220). The captured view

of the scene can be output to a display such as (286) in Figure 2B or 1560 in Figure 15,

See Figures 2A and 2B, Figure 15 and Column 6, Lines 19-30 and Lines 55-65);

determining that the first view of the scene comprises a desired portion of the

scene (The invention allows for any desired sub-image (desired portion of a scene) to

be selected (determined), **Column 6, Lines 31-32)**; and

allowing the information to progress to a processing engine (The reference has a

combining device which combines/warps (processes) images, **Column 18, Lines 10-**

18. Images from the camera array (which hold camera one and two) are combined

(processed) in the combing device 1540, **Column 18, Lines 14-16)**.

In regard to **Claim 24,** the reference teaches of the method of claim 23 further

comprising disallowing progression of the additional information to the processing

engine *(If an area of interest is not shown in an image, it can be discarded,* **Column 6,**

Lines 27-29).

With regard to **Claim 25,** *the reference teaches of the method of claim 23, further*

comprising performing an image signal processing function on the information (The

reference has a combining device which combines/warps (processes) the image

signals, **Column 18, Lines 10-18)**.

In regard to **Claim 26,** *the reference teaches of the method of claim 23, further*

comprising:

performing an image signal processing function on the information (The

reference has a combining device which combines/warps (processes) the image

signals, **Column 18, Lines 10-18)**; *and*

initiating presentation of the information on a display after performing the image

signal processing function (After going through the combining device 1540, the

information that is combined is displayed on an output mechanism 1570, **Column 18,**

Lines 15-21 and Figure 15).

Regarding **Claim 27,** *the reference teaches of the method of claim 23, further*

comprising:

determining that the second view of the scene comprises another desired portion

of the scene (If the second view of an image is a desired one, it can be selected,

Column 6, Lines 31-32. *As taught in the above claims, the determination that the*

second view of the scene comprises a desired portion of the scene is determined by the

user or during motion analysis. During motion analysis, the camera array motion sensor

detects the motion (activity) in a particular region (desired region). Upon detecting a

motion in a particular (desired) region, a signal (information) is sent to point a second

camera in the appropriate direction, **Column 12, Lines 22-32)**; and

allowing the additional information to progress to the processing engine (Images

from the camera array are processed in the combining device, **Column 18, Lines 14-**

15).

With regard to **Claim 28**, the reference teaches of the method of claim 23, further

comprising:

correlating the first view to a first image sensor and the second view with a

second image sensor (Looking at Figure 2A it is evident that Camera 1 and Camera 2

capture two different fields of view of the object 200) ; and

receiving a directional identification signal indicating that the first view contains a

desired scene activity (The camera array motion sensor detects the motion (activity) in a

particular region (determined direction). Upon detecting a motion in a particular region,

a signal (information) is sent to point another camera in the appropriate direction,

Column 12, Lines 22-32. However, if the motion is in the region of the first view

(desired view), the camera in the first view will be selected to capture the scene's

activity).

Regarding **Claim 29**, the reference teaches of the method of claim 23, further

comprising:

performing an image signal processing function on the information (The

reference has a combining device which combines/warps (processes) the image

signals, **Column 18, Lines 10-18)**; and

outputting post processed image signal information (After going through the

combining device 1540, the information that is combined is displayed on an output

mechanism 1570, **Column 18, Lines 15-21 and Figure 15)**.

With regard to **Claim 30**, the reference teaches of the method of claim 28, further

comprising initiating communication of the post processed image signal information as

data packets across a network (After the images are combined (processed) in the

combining device 1540, the data is broadcast to the display 1570, **See Figure 15 and**

Column 18, Lines 9 et seq.).

In regard to **Claim 31**, the reference teaches of the method of claim 29 further

comprising streaming the post processed image signal information (The reference

teaches of streaming the video information since the images being shown on the display

are not still images, they are streaming video images done in real time, **Column 16,**

Lines 45-55).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Foote et al. (US Patent No.: 7015954B1) as applied to claims 1 and 11 above, and further in view of Li et al. (US Patent No.: 7092014B1).

*With regard to **Claims 3 and 13**, Foote et al. teach of the system of claim 1*

further comprising:

a third image sensor operable to capture a third view of the scene (Camera 3 is

*used to capture a view (230) of the scene, **Column 6, Lines 26 and 27**). However,*

Foote et al. do not teach of an integrated circuit comprising the first image sensor, the

second image sensor, the third image sensor, and the processing engine.

Li et al. teach of an image system with multiple sensors (two or more sensors,

***Column 9, Lines 33-36**) and a processing engine (processing unit 144, Figure 3) in*

various different embodiments. In each embodiment, Li et al. teach that all or part of the

invention can be implemented in one or more application specific integrated circuit,

Column 4, Lines 42-46. It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate into Foote et al. an integrated circuit comprising the first image sensor, the second image sensor and the third image sensor as taught by Li et al. because this would make the invention more compact and it could thus be incorporated into hand-held devices (cell phones), gaming consoles and minicomputers.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Foote et al. (US Patent No.: 7015954B1).

*In regard to **Claim 19**, Foote et al. teach of an image module that comprises a zoom lens that performs focusing. However, the reference does not specifically teach of the zoom being an optical zoom or the focus being auto-focus. Official notice is taken by the examiner stating that it would have been obvious and well know at the time of the invention to have a lens that performed optical zoom with auto-focus. Having an optical zoom would have been better and more powerful than having a digital zoom and having the lens perform an auto-focus function would have saved the user the time and effort of manually focusing in on a scene to be imaged.*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pritham Prabhakher whose telephone number is 571-270-1128. The examiner can normally be reached on M-F (7:30-5:00) Alt Friday's Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

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USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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